

## WHAT IS CLAIMED IS:

1. An antioxidant composition comprising:
  - a flavonoid selected from the group consisting of a flavone, a flavonol, an isoflavone, an isoflavonol, an analogue thereof, a pharmaceutically acceptable salt thereof, and a mixture thereof; and
  - a mixture of at least two forms of vitamin E selected from the group consisting of alpha, beta, delta, epsilon, gamma, zeta, eta, xi1, xi2, and sigma tocopherols, and alpha, beta, delta and gamma tocotrienols, and derivatives thereof;
- 10 wherein the ratio of flavonoid to mixture of vitamin E forms is 40/60 to 90/10 percent by weight.
2. The antioxidant composition of Claim 1 further comprising bush plum, green tea extract, grape skin extract, or a mixture thereof.
- 15 3. The antioxidant composition of Claim 2 wherein the flavonoid and mixture of vitamin E forms are primary ingredients; and the primary ingredients are present in the composition in an amount of 12.1% up to 100% by weight.
4. The antioxidant composition of Claim 3 wherein the primary ingredients are present in the
- 20 composition in an amount of 30% to 85% by weight.
5. The antioxidant composition of Claim 3 wherein the primary ingredients are present in the composition in an amount of 82% by weight.
- 25 6. The antioxidant composition of Claim 2 wherein the bush plum, green tea extract, grape skin extract, or a mixture thereof are secondary ingredients; and the secondary ingredients are present in the composition in an amount of between 0% to 87.9% by weight.
7. The antioxidant composition of Claim 6 wherein the secondary ingredients are present in the
- 30 composition in an amount of 15% to 70% by weight.
8. The antioxidant composition of Claim 6 wherein the secondary ingredients are present in the composition in an amount of 18% by weight.
- 35 9. The antioxidant composition of Claim 6 wherein the secondary ingredients are a combination of green tea extract, and grape skin extract.

10. The antioxidant composition of Claim 9 wherein the grape skin extract and green tea extract are present in the composition in a weight ratio of 60/40 to 80/20.
- 5 11. The antioxidant composition of Claim 10 further comprising bush plum in an amount of 2% by weight of the composition.
12. The antioxidant composition of Claim 1 wherein the flavonoid is a flavonol and the flavonol is selected from the group consisting of quercetin, kaempferol, myricetin, an analogue thereof, a  
10 pharmaceutically acceptable salt thereof, and a mixture thereof.
13. The antioxidant composition of Claim 12 wherein the flavonol is quercetin.
14. The antioxidant composition of Claim 1 wherein the vitamin E forms are selected from the group  
15 consisting of alpha, beta, delta, and gamma tocopherol.
15. An antioxidant composition comprising quercetin, a mixture of alpha, beta, delta, and gamma tocopherols, grape skin extract, green tea extract, and bush plum wherein the quercetin and mixture of tocopherols comprise between 12.1% to 100% by weight of the composition and wherein the quercetin and  
20 mixture of tocopherols are present in a weight ratio of 40/60 to 90/10 percent.
16. The antioxidant composition of Claim 15 having weight ratios of quercetin, tocopherols, grape skin extract, green tea extract, and bush plum of 49/33/9.5/6.5/2.
- 25 17. The antioxidant composition of Claim 15 wherein the composition has an antioxidant activity of at least 10,000 micromoles Trolox equivalent units per gram, using an ORAC(o) oxygen uptake measuring assay.
18. The antioxidant composition of Claim 1 further comprising a carrier comprising gum acacia,  
30 xanthan gum, gum tragacanth, gum ghatti, and aloe vera gel extract; wherein the composition and carrier have a weight ratio of 1:2.
19. The antioxidant composition of Claim 18 wherein the carrier comprises gum acacia, xanthan gum,  
35 gum tragacanth, gum ghatti, and aloe vera gel extract in a weight ratio of 30/30/20/19/1.

20. The antioxidant composition of Claim 18 wherein the composition is roller-compacted.

21. The antioxidant composition of Claim 15 further comprising a carrier comprising gum acacia, xanthan gum, gum tragacanth, gum ghatti, and aloe vera gel extract; wherein the composition and carrier have a weight ratio of 1:2 to 2:1.

22. The antioxidant composition of Claim 16 further comprising a carrier comprising gum acacia, xanthan gum, gum tragacanth, gum ghatti, and aloe vera gel extract in a weight ratio of 30/30/20/19/1; wherein the composition and carrier have a weight ratio of 1:2 to 2:1 and wherein the composition is roller-compacted.

23. A method for measuring antioxidant activity of a test sample having water and lipid soluble ingredients by measuring oxygen uptake, comprising:

combining an oxidizable target molecule and the test sample in a solvent of acetone/water/detergent to form a test mixture at 37 °C under conditions where oxygen is present in equilibrium with air;

adding an azo radical initiator to the test mixture; and

measuring area under an oxygen uptake curve of the test mixture to provide a measure of the antioxidant activity of the test sample.

24. The method of Claim 23 further comprising:

combining an oxidizable target molecule and a solvent of acetone/water/detergent to form a control mixture at 37 °C under conditions where oxygen is present in equilibrium with air;

combining an oxidizable target molecule and Trolox in a solvent of acetone/water/detergent to form a standard mixture at 37 °C under conditions where oxygen is present in equilibrium with air;

adding an azo radical initiator to the control mixture, and to the standard mixture;

measuring area under an oxygen uptake curve of the control mixture, and the standard mixture; and

determining antioxidant activity in Trolox equivalents to provide a measure of the antioxidant activity of the test sample.

25. The method of Claim 23 wherein the test sample comprises water soluble ingredients.

26. The method of Claim 23 wherein the test sample comprises lipid soluble ingredients.

27. The method of Claim 23 wherein the oxidizable target molecule is linoleic acid.

28. The method of Claim 23 wherein the acetone/water/detergent is in a 1:1:1 volume ratio.

29. The method of Claim 23 wherein the azo radical initiator is AAPH.

5

30. The method of Claim 23 wherein oxygen uptake is measured with an oxygen electrode.

31. A method of measuring stability of an antioxidant composition over time, the composition having water and lipid soluble ingredients, by measuring oxygen uptake of the composition at a first time point and at a second, later, time point, comprising :

10

combining an oxidizable target molecule and the antioxidant composition in a solvent of acetone/water/detergent to form a test mixture at 37 °C under conditions where oxygen is present in equilibrium with air;

adding an azo radical initiator to the test mixture; and

15

measuring area under an oxygen uptake curve of the test mixture to provide a measure of the antioxidant activity of the antioxidant composition at the first time point and at the second time point;

wherein a difference between the area under the oxygen uptake curve for the first time point and the area under the oxygen uptake curve for the second time point is a measure of stability of the antioxidant composition over time.

20

32. A process of formulating an antioxidant composition having time release and increased shelf life, comprising:

blending the antioxidant composition of Claim 1 with a carrier comprising gum acacia, xanthan gum, gum tragacanth, gum ghatti, and aloe vera gel extract in a weight ratio of 30/30/20/19/1; wherein the composition and carrier have a weight ratio of 1:2 to 2:1 to form a blend;

25

roller compacting the blend to form a compact;

milling the compact to form a granulation; and

30

forming the granulation into a dosage form.

33. The process of Claim 32 wherein the weight ratio of antioxidant composition to carrier is 1:2 and the dosage form is 500 mg.

35

34. A process of increasing the shelf life of an antioxidant formulation comprising:

combining the antioxidant formulation and a carrier comprising gum acacia, xanthan gum, gum tragacanth, gum ghatti, and aloe vera gel extract in a weight ratio of 30/30/20/19/1; wherein the composition and carrier have a weight ratio of 1:2 to 2:1 to form a blend; and roller compacting the blend to form a compact.

5

35. A method of increasing serum antioxidant activity of an individual comprising administering 500 mg to 1 g of the antioxidant composition of Claim 22 per day to the individual.